



**INSTALLATION, OPERATION & MAINTENANCE MANUAL**  
**ENERGY RECOVERY VENTILATOR**

TRC1600



**TRC1600 INFO**

**TABLE OF CONTENTS**

TRC1600 info..... 2-6  
Installation..... 7-15  
Start-up & Operation..... 16-19  
Maintenance.....20-22

**ABOUT S&P**

S&P USA operations are based in Jacksonville, Florida. This geographically strategic location allows the shipment of products throughout the US and Canada. The Jacksonville manufacturing facility has more than 150,000 square feet of warehouse space for the stocking of a comprehensive range of products. This permits the overnight delivery of many popular model sizes to anywhere in the US and Canada.

At S&P USA we take pride in the fact that our customers receive only the very highest levels of customer service and care. Our internal and external technical and customer service teams are on-hand to provide professional and experienced application advice to enable our customers to apply our products to their particular ventilation and air movement applications. As the USA sales, marketing and distribution division of the Soler & Palau Ventilation Group of companies we are committed to providing only the very highest levels of customer service. Our commitment in providing only the very highest standards of customer service is key to our company strategy.

Soler & Palau Ventilation Group is the world's leading fan manufacturer. It celebrated its 50th anniversary in 2001. Soler & Palau is able to offer a range of ventilation products benefiting from over 50 years of experience within the industry. The company's impressive, long-term growth is the result of one simple philosophy—develop an air-moving product that effectively and efficiently meets the needs of the customer, supported by unparalleled engineering, distribution and service.

In 1951 Eduard Soler and Josep Palau, both born in Ripoll, Spain, founded the company Soler & Palau (S&P). From the very start the business proved to be their vocation. Together they combined their extensive knowledge and flair to ensure the successful start of their business project. There is continual in-house product development with state-of-the-art technology, and a continued program of in-house laboratory certifications.

Currently S&P's R&D, manufacturing and distribution facilities occupy a total of 1.1 million square feet, with offices and locations around the globe. S&P products can be found in virtually any commercial or residential application, ranging from innovative, quiet and reliable room ventilators to large diameter, high capacity exhaust systems designed for critical applications in some of the world's toughest environments.

**INDOOR UNIT**



**Ventilation Type:**

Static plate, heat and humidity transfer

**Typical Airflow Range:** 500-2,200 CFM

**AHRI 1060 Certified Core:** Two L125-G5

**Standard Features:**

TEFC Premium efficiency motors

Motor starters

Non-fused disconnect

24 VAC transformer/relay package

**Filters:**

Total qty. 4, MERV 8: 20" x 20" x 2"

**Unit Dimensions & Weight:**

60 3/4" L x 43" W x 35 3/4" H

406-551 lbs., varies by option(s)

**Max. Shipping Dimensions & Weight (on pallet):**

70" L x 47" W x 40" H

620 lbs.

**Motor(s):**

Qty. 2, Belt drive blower/standard motor packages with adjustable sheaves (see table below)

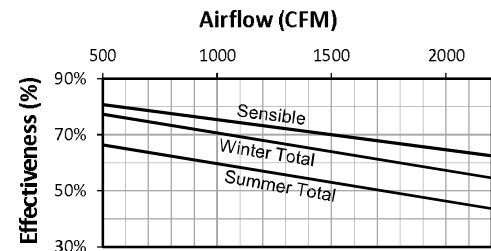
Motor HP	Blower RPM	Sheave Adj. Turns Open	External Static Pressure (in. w.g.)													
			0.00		0.25		0.50		0.75		1.00		1.25		1.50	
			SCFM	BHP	SCFM	BHP	SCFM	BHP	SCFM	BHP	SCFM	BHP	SCFM	BHP	SCFM	BHP
1.5	1148	4	1592	0.7	1480	0.7	1320	0.6	1120	0.5	800	0.4				
	1304	2	1809	1.0	1720	1.0	1600	0.9	1410	0.8	1250	0.7	975	0.6	630	0.4
	1460	0	2025	1.5	1950	1.4	1845	1.3	1715	1.2	1540	1.1	1400	1.0	1165	0.8

**Note:** Airflow performance includes effect of clean, standard filter supplied with unit.

**ELECTRICAL DATA**

Standard Electrical Specifications						
HP	Volts	HZ	Phase	FLA per motor	Min. Cir. Amps	Max. Overcurrent Protection Device
1.5	120	60	Single	15.2	34.2	45
1.5	208-230	60	Single	8.2-7.6	18.5	25
	208-230	60	Three	4.6-4.8	10.8	15
	460	60	Three	2.4	5.4	15

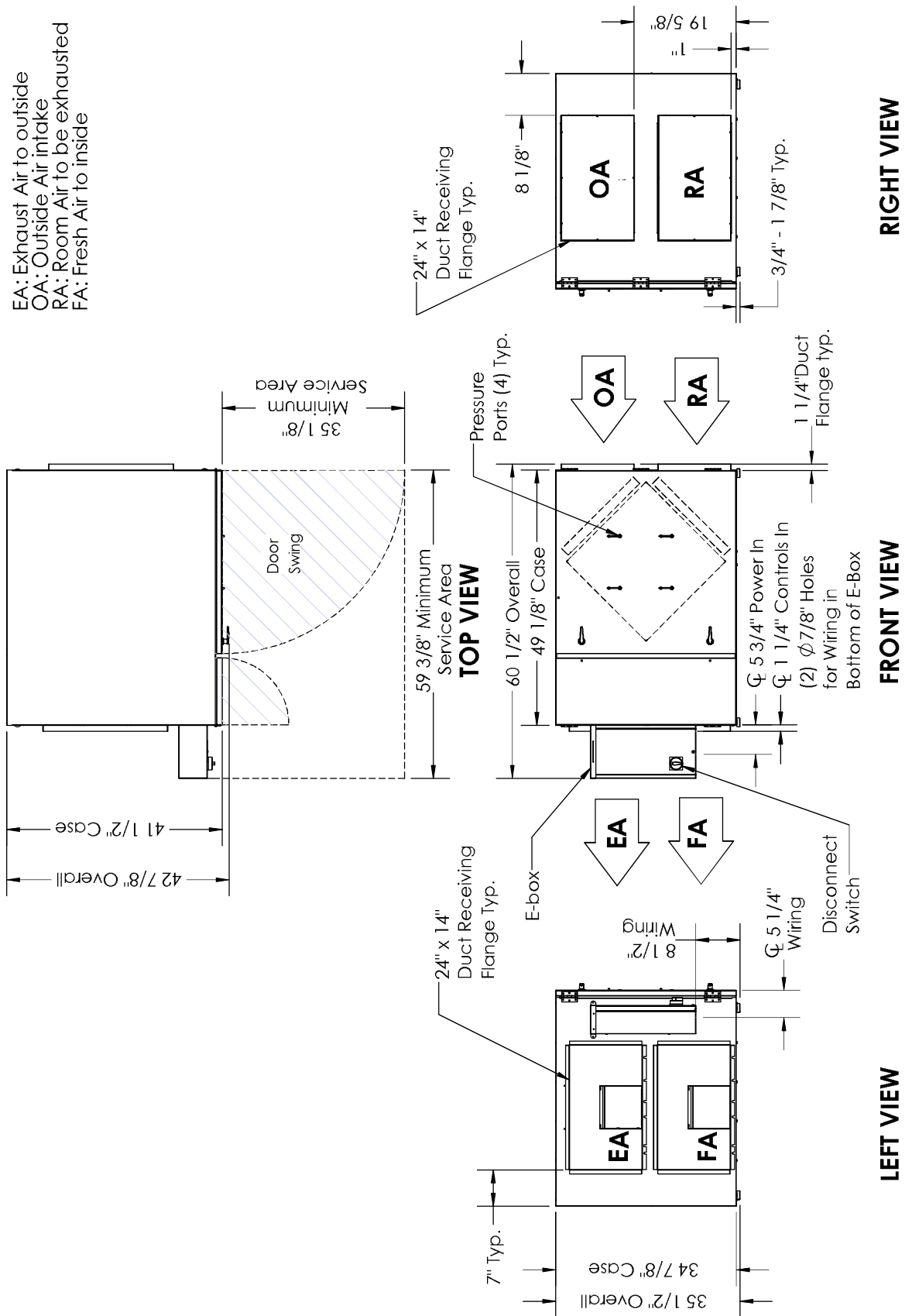
**CORE PERFORMANCE**



At AHRI 1060 standard conditions.  
See all AHRI certified ratings at [www.ahrinet.org](http://www.ahrinet.org).

**ERV TRC1600**

EA: Exhaust Air to outside  
 OA: Outside Air intake  
 RA: Room Air to be exhausted  
 FA: Fresh Air to inside



**INSTALLATION**

**PLACEMENT OF THE TRC1600**

The TRC1600 is designed for installation in a sheltered location, out of the weather.

The preferred mounting location is sitting on a concrete floor (feet are provided on unit) or attached to a concrete wall. The concrete will isolate any blower vibration.

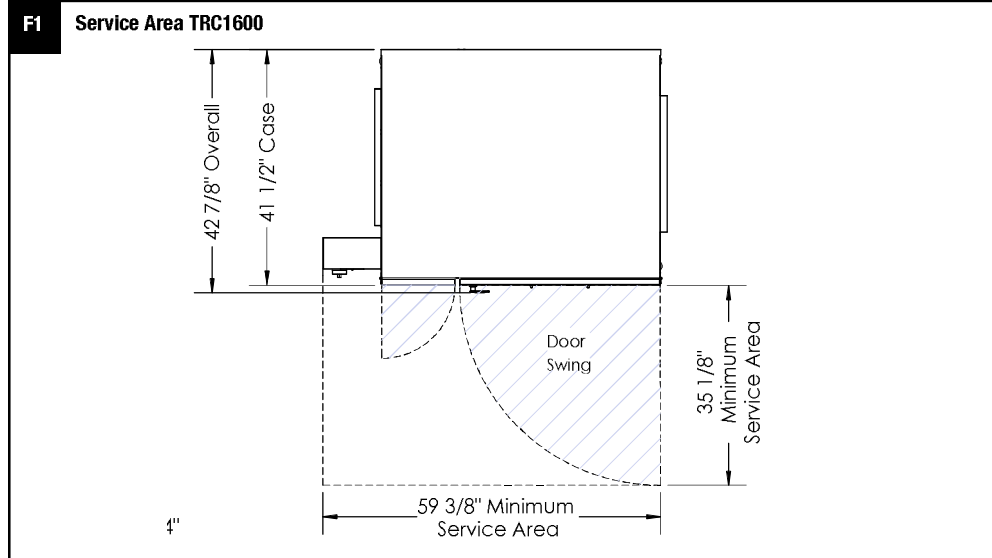
Select a location that is central to the inside duct runs, and close to both the exhaust duct (to the outside) and the fresh air duct (from the outside).

The exhaust outlet and outside air inlet on the outside of the building should be at least ten feet apart to avoid cross-contamination.

The exhaust outlet should not dump air into an enclosed space or any other structure. The inlets and outlets should be screened against insects and vermin and shielded from the weather to prevent the entry of rain or snow.

Install the ERV where you can remove the door for cleaning the core and filter, and where you can get at the wiring for installation and service.

**PLANNING YOUR INSTALLATION**



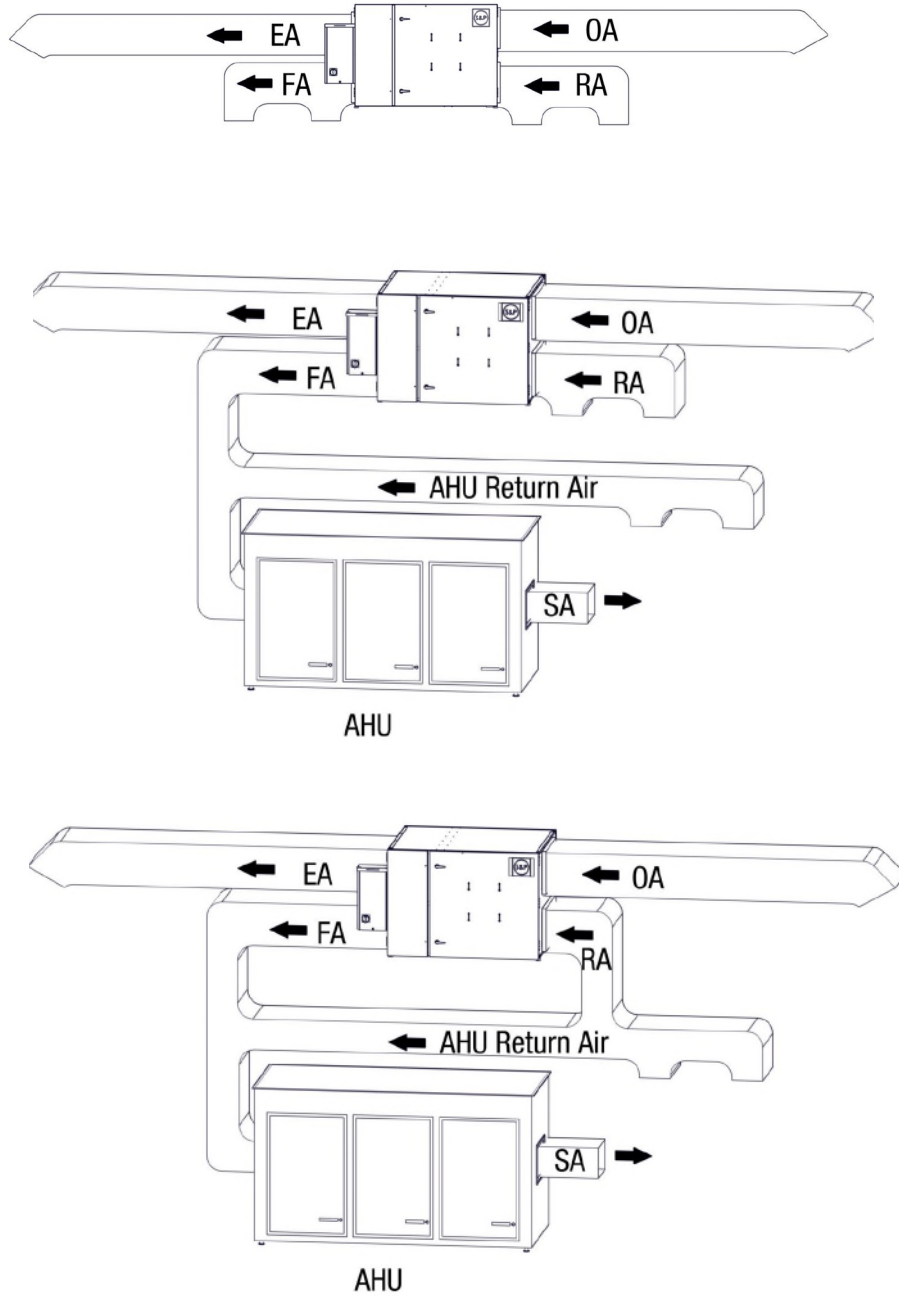
**CAUTION**

Provide Adequate Service Access for Maintenance. The unit will require regular filter and core inspections. Install the unit where you can access the core for cleaning and replacing the filters, and where you can get at the wiring for installation and service.

**INSTALLATION**

**PLANNING YOUR INSTALLATION**    **APPLICATIONS**  
See figure F2 for examples of some common installation approaches.

**F2** Common Installation Approaches



**INSTALLATION**

**DUCTS TO THE OUTSIDE**

Ducts connecting the TRC1600 to the outside must be insulated, with sealed vapor barrier on both inside and outside of the insulation.

The exhaust outlet and fresh air inlet on the outside of the building should be at least ten feet apart to avoid cross-contamination.

**INSIDE DUCTWORK SYSTEM**

**Follow Engineer's Ductwork Design**

Ductwork should be designed by an engineer to allow the unit to provide the required airflow:

**Air Flow Rates**

Design the system to provide the lowest air exchange rate that will accomplish the ventilation goals. At lower air flow rates, energy recovery effectiveness improves. See Specification page.

**Duct Transitions**

Ducts should enter and exit the unit through smooth, gradual transitions.

**Duct Insulation**

If the inside ducts run through un-conditioned spaces, they must be insulated, with a sealed vapor barrier on both inside and outside of insulation.

**Picking up Stale Air in the Building**

Locate the stale air pick-ups high in rooms where moisture, odor, or other contaminants are generated. If some duct runs are much shorter than the others, install dampers so you can balance flows. Most rooms require only one stale air pick-up.

**Duct Fresh Air from the TRC1600 into the heated space**

Fresh Air from the TRC1600 often can be ducted into an existing HVAC air distribution system.

Sometimes, however, it is more practical to install a separate distribution system for the Fresh Air.

The Fresh Air supplied by the TRC1600 will be somewhat cooler or warmer than room air in very cold or hot weather. Consider this when deciding how to distribute the Fresh Air.

**WARNING**

The fresh air inlet should be at least 10' away from chimneys, furnace and water heater exhausts, and other sources of carbon monoxide, humidity or other contamination. Do not locate the fresh air inlet where vehicles may be serviced or left idling. Never locate the fresh air inlet inside a structure.

**Connection of Fresh Air from TRC1600 to ducted heating & cooling system**

Avoid a situation in which operation of the main air-handling blower unbalances flow through the TRC1600. (See Balance the Air Flows, below). This is a particular concern if the TRC1600 is to be operated on a different schedule from the main air-handler. Minimize the effect of the air-handler on the TRC1600 by connecting Fresh Air from unit at a point well upstream from the air handler.

**Balance the Air Flows**

The air flow rate for both the Fresh Air and the Exhaust Air should be roughly equal (or "balanced") for best performance of the TRC1600. If the TRC1600 is connected to an existing air-handling system it may be necessary to check for balance with and without the main air-handling blower in operation.

In some facilities a slight positive or negative pressure in the building is desired. RenewAire heat recovery ventilators can generally operate with a flow imbalance of up to 20% without appreciable loss in heat recovery efficiency. However, very low exhaust air flow rates may result in frosting of the core during extremely cold weather.

**Use Dampers to Reduce Air Flow to Desired Rates, if necessary**

The TRC1600's blower motors are well suited for volume control by dampers on the outlets of the unit. Energy consumption of the blower motors drops as air volume is reduced by partially closed dampers.

**PLANNING YOUR INSTALLATION**

**WARNING**

**DO NOT PLACE ANY PICK-UPS IN GARAGES, LOADING AREAS OR IN FUME HOODS!**

Make the Ducts from the Stale Air Pick-ups to the TRC1600 as simple and direct as possible.

INSTALLATION

PLANNING  
YOUR INSTALLATION

CAUTION

To avoid motor bearing damage and noisy and/or unbalanced blowers, keep drywall spray, construction dust, etc., out of unit.

CAUTION

Do not remove or disable the wiring interconnection between the Overload Relays and the Contactors. Without this interconnection the motor(s) will not be protected against overload.

SOUND ATTENUATION

Take these simple steps to attenuate noise from the unit:

WARNING

Danger of Electrical Shock when servicing an installed unit.

ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING!

More than one disconnect switch may be required.

Proper Wiring Size Selection and Wiring Installation are the Responsibility of the Electrical Contractor.

WARNING

RISK OF FIRE, ELECTRIC SHOCK, OR INJURY. OBSERVE ALL CODES AND THE FOLLOWING:

1. Before servicing or cleaning the unit, switch power off at disconnect switch or service panel and lock-out/tag-out to prevent power from being switched on accidentally. More than one disconnect switch may be required to de-energize the equipment for servicing.
2. This installation manual shows the suggested installation method. Additional measures may be required by local codes and standards.
3. Installation work and electrical wiring must be done by qualified professional(s) in accordance with all applicable codes, standards and licensing requirements.
4. Any structural alterations necessary for installation must comply with all applicable building, health, and safety code requirements.
5. This unit must be grounded.
6. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment that might be installed in the area affected by this equipment. If this unit is exhausting air from a space in which chimney-vented fuel burning equipment is located, take steps to assure that combustion air supply is not affected. Follow the heating equipment manufacturer's requirements and the combustion air supply requirements of applicable codes and standards.
7. Use the unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
8. This unit is intended for general ventilating only. Do not use to exhaust hazardous or explosive materials and vapors. Do not connect this unit to range hoods, fume hoods or collection systems for toxics.
9. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
10. If installed indoors this unit must be properly ducted to the outdoors.

OUTSIDE THE BUILDING

Exhaust velocity noise is the primary cause of unit-related noise outside the building. Size the exhaust duct and grille for less than 1000 FPM air velocity. When practical, orient the exhaust air hood to point away from houses or public areas.

DUCTS

Make sure the ductwork at the unit outlets is stiff enough to resist the flexure and resulting booming associated with system start-up and shut-off, as well as the turbulent flow conditions at the blower outlets.

In general, provide smooth transitions from the ERV's outlets to the duct. The ducts connecting to the outlets should be straight for a sufficient distance, with gradual transitions to the final duct size.

These guidelines are consistent with SMACNA recommended duct layout practices for efficient and quiet air movement. Follow SMACNA guidelines.

RADIATED NOISE

The TRC1600 is insulated with high-density fiberglass. This provides significant attenuation of radiated sound.

The outlet ducts can be significant sources of radiated sound as well. The FA and EA ducts (outlet ducts) should be insulated for sound control. This insulation should start at the unit. At a minimum the first ten feet of duct should be insulated. All parts of the FA and EA ducts located in the mechanical space should be insulated for sound control, both to minimize sound radiation out of these ducts and also to control sound radiation into the ducts.

AERODYNAMIC (VELOCITY) NOISE

When sound attenuation is a design concern, the primary consideration is velocity noise at the unit's Fresh Air blower outlet. The average velocity at the blower outlets is 3642 FPM when the unit is operating at 1500 CFM.



**INSTALLATION**

**INSTALLATION INSTRUCTION**

**MOUNTING THE UNIT**

The TRC1600 is manufactured with four screw-adjustable legs for installation at floor level in an upright position.

The TRC1600 may also be hung on the wall or suspended from a ceiling. Screw or bolt mounting straps or brackets directly to the sheet metal case as necessary. Sheet metal screws should not penetrate further than 1/2" into case. Make sure your fasteners don't damage internal parts. Do not screw into the door.

Note that leveling legs supplied with TRC1600 can be removed and replaced with 3/8" bolts to secure unit to mounting brackets, located under the unit. Do not hang the unit from these threaded inserts.

**ELECTRICAL SPECIFICATIONS**

**NOTE:** Proper Wiring Size Selection and Wiring Installation are the Responsibility of the Electrical Contractor.

Blower & contactor voltages are specified with order and set at factory.

Brake Horsepower at various Blower RPM, Motor Rating, and ESP combinations are available on Spec Sheet or from factory.

Electrical Options and Ratings are on the Unit Label (located near electrical box). Find the complete Unit Model Number in the lower left corner of the Unit Label.

**CAUTION**

The TRC1600 weighs approximately 414 lbs. It is the installer's responsibility to make sure that the screws or bolts used for securing the units are properly selected for the loads and substrates involved. Secure the TRC1600 so that it cannot fall or tip in the event of accident, structural failure or earthquake.

**⚠ WARNING**

Secure the TRC1600 with straps or clamps so that it cannot fall or tip in the event of accident, structural failure or earthquake.

**⚠ WARNING**

Danger of Electrical Shock when servicing an installed unit.

**ALWAYS DISCONNECT POWER SOURCE BEFORE SERVICING!** More than one disconnect switch may be required.

Proper Wiring Size Selection and Wiring Installation are the Responsibility of the Electrical Contractor.

**ERV TRC1600**

**INSTALLATION**

**WIRING SCHEMATICS TRC1600 P1 SINGLE PHASE UNIT**

**NOTE:** Schematics shown are representative of standard units. See Unit Schematic label for detailed information.

